EFFECT OF BAITS ON THE EFFICIENCY OF MALIAN TRAPS IN LAKE KAINJI

BY

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ABSTRACT

Studies on the effects of two fishing baits on the catch composition of Malian Traps in Lake Kainji were monitored. The Traps were set at Monia fishing village in the southern basin of the Lake Baited with boiled yam (Dioscorea rotundata) and fresh palm fruit (Elaeis guineensis) and were inspected twice daily for seven weeks. The fishes caught comprised of nine (9) species belonging to four (4) families. The result of analysis of variance of the biomass as well as number and percentages of fishes caught in the traps by the baits showed there was no significant difference (P>0.05). However, both baits showed better efficiency for Tilapia zilli, Oreochromis niloticus and Hemichromis fasciatus than other species caught but trap baited with fresh palm fruit had better efficiency for Distichodus restratus and Alestes nurse. There was wide range between the minimum and the maximum size of species caught, which showed the efficiency of the traps in capturing small size, juveniles and the adult of large fish species due to small meshsize (1") net cover of the trap. Recommendations were made for better performance and profitable fishing of Malian traps.
KEY WORDS: Fishing Baits Malian Trap

INTRODUCTION

Fishermen in the northern part of Nigeria still rely on various types of fishing traps, and the design of these traps have varied from time to time. This could be due to the hydrology of the diverse water bodies, scale of fishing operation, availability of the local materials and relatively cheap costs of the traps compared to the modern ones (Umar and Ipinjolu, 2001).

Malian trap is relatively new, reportedly copied by Nigerian fishermen from migratory Malian fishermen (Ipinjolu et al 2004). Currently, it is the most widely used trap in Lake Kainji as a result of its high performance over the other traps and the fishermen accept it as a modern way of fishing.

Bait is defined as food or luring substance made real or imitation used to entice a prey especially a fish (Daodu 2000). The study of bait is not new, authors such as Von Brandt (1984), define bait as not restricted only to feed but to find the right stimuli influencing the behaviour of a fish on another prey in a positive or negative manner as needed for any fishing method.

Baiting and fishing go hand in hand, the success of fishing with traps is highly depended on bait. Most fishermen in Monnai fishing village uses different types of baits such as cooked corn bran, rice bran, whole fish, stomach content of fish etc. However to find the right bait that will give the best catch is a problem. With this in mind, this study was carried out in order to:

1. Determine the effects of two baits type on the catches of Malian trap in Monnai fishing village.
2. Make recommendations on the most efficient bait type for Malian trap fishing on the Monnai fishing ground.

MATERIALS AND METHOD

Study Area

The study was conducted at the Monnai fish village in Lake Kainji. The Lake lied in the Savannah zone of North-Western part of Nigeria and is bordered by Niger and Kebbi States. (Balogun and Ibeun (1995) Adimula (2003)).

Malian T

Eight M ps were constructed using cane sticks (*Mimosa Pigra*) with the following dimensions:- Height ameter at the base 69cm, Middle 60cm and 25cm. The entrance valve had diameter 16cm

and net mesh size 25mm. Each trap had three inlet valves, the top had loosed hanging nets that could be opened for baiting and removal of fish caught. Detailed construction procedures had been reported in Ipinjolu et at, (2004)

Experimental Design and Set-up

The experiment was set-up in complete randomized block design (CRBD) with two replication. All the eight traps were anchored, four were baited with boiled yam and the other four were baited with fresh palm fruit. They were tagged and randomly set at the littoral zone of the river.

Data Collection and Analysis

The traps were inspected for catches twice daily (between 7.30 8.30am and 4.30 5.30pm) Fish caught were identified using the monographs of Olaosebikan and Raji (2003). The number of each species caught was counted. Total length (cm) of each fish was measured on a graduated measuring board while the total weight (g) was obtained using sensitive weighing balance (Mettler P163). The data collected on number and biomass of fish were subjected to analysis of variance (ANOVA) (Steel and Torrie 1980).

RESULTS

Types of Fish Caught

Nine different species belonging to four families were caught in the two bait types , (Table1.) The species caught include *Bagrus bayad*, *Tilapia zilli*, *Oreochromis niloticus*, *Hemischromis fasciatus*, *Sarotherodon galilaeus*, *Hydrocynus forskalii* and *Hemichromis bimaculatus*. Only the Malian traps baited with fresh palm fruit caught *Distichodus rostratus* and *Alestes nurse*.

Table 1: Types of Fish Caught in Baited Malian Trap.

Family	Species
Bagridea	*Bagrus bayad*
Cichlidae	*Tilapia zilli*
	Hemichromis fasciatus
	Sarotherodon galilaeus
	Hemictromis bimaculatus
	Oreochronis niloticus
Distichodontidae	*Distichodus rostratus*
Characidae	*Alestes nurse*
	Hydrocynus forskalii.

Number and Percentage of Fish Caught

The number and percentage of fish caught in Malian trap baited with two different baits are shown on Table 2. The total number of fish caught was 198 of which the highest percentage (52.53%) was recorded by trap baited with fresh palm fruit. Boiled yam had 47.47%. The number of different fish species caught using all baits showed that *Tilapia zilli* had the largest percentage of 34.35% followed by *Hemichromis fasciatus*

25.25% and *Oreochromis nilotices* 17.17% respectively However, the dominant fishes in the catches of the trap baited with boiled yam were *Tilapia zilli* that accounted for 40.42% followed by *Hemichromis fasciatus* 26.60%, *Oreochromis niloticus* 21.28% and *Bagrus bayad 5.32%*. For fresh palm fruit, the dominant fishes in the catches of the trap were *Tilapia zilli* 28.85% *Hemichromis fasciatus* 24.04%, *Oreochromis niloticus* 13.46% and *Hydrocynus forskali 9.61%*.

Table2: Number and Percentage of Various Fish Species Caught in Mahan Traps.

Fish Species	Baits					
	Boiled Yam		Fresh Palm fruit		Overall Total	
	No	%	No	%	No	%
Bagrus bayad	5	5.32	6	5.77	11	5.55
Tilapia zilli	38	40.42	30	28.85	68	34.35
Oreochomis niloticus	20	21.28	14	13.46	34	17.17
Hemichromis fasciatus	25	26.60	25	24.04	50	25.25
Sarotherodon galilaeus	1	1.06	6	5.77	7	3.53
Distichodus rostratus	-	-	6	5.77	6	3.03
Alestes nurse	-	-	3	2.88	3	1.52
Hydrocynus forskali.	1	1.06	10	9.61	11	5.56
Hemichromis bimaculatus	4	4.26	4	3.85	8	4.04
Total	94	100	104	100	198	100
Relative Percentage	47.47		52.53			

Biomass of Fish Caught

A total of 2.50kg of fish were caught (Table 3) of which *Tilapia zilli*, *Hemichromis fasciatus*, and *Oreochromis niloticus*, accounted for 35.15%, 25.98% and 15.22% of the weight of all the fish caught with the two baits respectively. The weight of fish baited with boiled yam was 1.13kg of which *Tilapia zilli*, *Hemichromis fasciatus*, and *Oreochromis niloticus* and *Bagrus bayad* accounted for the largest proportion of 42.39%, 23.35%, 15.00% and 11.35% respectively.

The weight of fish baited with fresh palm fruit was 1.37kg of which *Tilapia zilli*, *Hemichromis fasciatus* *Oreochromis niloticus* and *Bagrus bayad* contributed 29.16%, 28.16% 15.41% and 6.02% respectively while the rest of the species accounted for 25.34% The result of analysis of variance of the biomass as well as number and percentages of fishes caught in the traps by the baits showed there was no significant difference ($P>0.05$).

Table 3: Biomass of Fish Caught in Malian Trap

Fish Species	Boiled Yam		Fresh Palm fruit		Overall Total	
	Wt(g)	%	Wt(g)	%	Wt(g)	%
Bagrus bayad	125.532	11.35	82.261	6.02	210.793	8.44
Tilapia zilli	479.803	42.39	398.192	29.16	817.995	35.15
Hemichromis fasciatus	264.299	23.35	384.536	28.16	648.835	25.98
Sarotherodon galilaeus	8.940	0.79	66.321	4.86	75.261	3.01
Distichodus rostratus	-	-	70.916	5.19	70.916	2.81
Alestes nurse	-	-	32.244	2.36	32.244	1.29
Hydrocynus forskali.	6.640	0.59	67.119	4.91	73.759	2.95
Hemichromis bimaculatus	73.843	6.52	53.734	3.93	127.579	5.11
Oreochomis niloticus	169.715	15.00	210.426	15.41	380.141	15.22
Total	1,131.774	100	1,365.749	100	2,497.523	100
Relative Percentage	45.32		54.68			

Sizes of Fish Caught

Table 4: shows the length (cm) and weight (g) of fish species caught in the traps. The minimum length of fish caught ranged from 4.30cm of *Oreochromis niloticus* to 8.90cm of *Bagrus bayad* and maximum length also ranged from 10.00cm of *Sarotherodon galilaeus* to 25.50cm of *Hemichromis fasciatus*.

The minimum weight ranges from 2.09g of *Oreochromis niloticus* to 12.63g of *Bagrus Bayad* and maximum weight ranges from 13.66g of *Oreochromis niloticus* to 120.62g of *Hemichromis fasciatus*

Table 4: Summary of Length and Weight of Fish Species Caught in Malian Traps.

Fish Species	Minimum (cm) Length	Maximum (cm) Length	Minimum (g) Weight	Maximum (g) Weight
Tilapia zilli	4.5	15	2.141	34.455
Bagrus bayad	8.9	15.5	12.626	22.212
Hydrocynus forskalii	5	11.4	2.374	19.360
Sarotherodon galilaeus	6	10	3.620	20.690
Oreochomis niloticus	4.3	12	2.091	13.658
Hemichromis fasciatus	5.4	25.5	3.419	120.620
Distichodus rostratus	8.2	15	9.682	35.444

DISCUSSION

The types of fish caught in baited malian trap (Table 1) showed that the species are diverse in terms of the type of food they feed upon which ranges from microphagus, larvae and insects feeders (*Distichodus* and *Oreochromis*) to Ominivores (*Bagrus*) and Carnivores (*Hydrocynus*). The difference in relative quantities of each type of fish caught in the Malian trap could be due to the influence of the baits and the diverse fish families and species present in the Lake. This agrees with the work of Ita (1993) that Lake Kainji is reported to have some 104 different types of commercially important fish species.

Comparison of the results of the quantities of fish caught by both bait in Malian trap (Table 2 and 3) showed that the highest percentage in number and biomass of fish caught in each of the bait types was recorded by trap baited with fresh palm fruit. This might probably be due to the effects of the colour of the bait which was bright red thereby attracting more fish than trap baited with boiled yam. The results also showed that baiting the trap with fresh palm fruit enhanced its efficiency for *Distichodus rostratus* and *Alestes nurse* apparently for the same reason given above.

However, the results of the study also showed that baiting the trap with boiled yam enhanced its efficiency for *Tilapia zilli, Oreochromis niloticus* and *Hemichromis fasciatus*. This could be due to the fact that these species of fish have the ability to perceive odour in water more than using their vision / eyesight to detect colour. This is in line with the observation of Karl et al (1977) who reported that food stimuli perceived by the senses like smell taste, sight and the lateral line system control the momentary feeding act of fishes, that interaction of these factors determines what a fish will feed upon.

CONCLUSION AND RECOMMENDATION

The findings from this study showed that the two baits have effects in attracting different species of fish and the trap (Malian trap) has high efficiency in trapping these species. Greater percentage in number and weight of fish caught in each of the bait types was recorded by trap baited with fresh palm fruit. However, it was found out that two particular species of fish (*Distichodus rostratus* and *Alestes nurse*) were caught by the trap baited with fresh palm fruit. The use of Fresh palm fruit would enhance the catch efficiency of these two species. For better performance of the two bait types it could be recommended that the baits should be incorporated in Malian traps. Fresh palm fruit is recommended as bait for trapping of *Distichodus rostratus* and *Alestes nurse*.

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